

File Copy



**ENVIRONMENT  
AGENCY**

## Variation Notice with introductory note

Pollution Prevention and Control Regulations 2000

---

**Billingham Fertilizer Works**

**Terra Nitrogen (UK) Ltd  
Terra production Centre  
PO Box 81  
Billingham  
TS23 1XT**

**Variation Notice number**

**NP3034LV**

**Permit number**

**BX3287IK**

# Introductory note

## **This introductory note does not form a part of the Variation Notice.**

The following Notice is issued under Regulation 17 of The Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I.2000 No. 1973 (as amended) (the Regulations) to vary the conditions of a Permit issued under the Regulations to operate [part of] an installation.

The Notice comprises Schedule 1 containing conditions to be deleted, Schedule 2 conditions to be amended and Schedule 3 conditions to be added. The Notice is subject to the express conditions set out in Schedules 1 to 3.

The Permit, as amended by this Variation Notice, contains conditions which have to be complied with. It should be noted that aspects of the operation of the installation which are not regulated by those conditions are subject to the condition implied by Regulation 12(10) of the PPC Regulations, that the Operator shall use the best available techniques for preventing or, where that is not practicable, reducing emissions from the installation. Techniques include both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.

## **Brief description of the changes introduced by this variation notice.**

The main changes in the permit relate to the improvement programme, monitoring requirements of S1, S2, W1 & W3 and the reporting tables. The Radioactive Substances authorisations and registrations have been added to the 'other existing licences' table. The remainder of the changes are to correct typographical errors.

The Improvement programme items have been modified to reflect achievable dates and to combine items that were asking for the similar actions.

All reference to S1 & S2 has been removed as this is an emission to sewer from the whole of the Billingham site, not just from the Terra Facility and is presently covered by a water discharge consent.

All reference to W1 & W3 sampling in table 2.10.1, other monitoring requirements, has also been removed as it was decided that these were not value adding, (nor required to be reported) as a daily composite sample is already being taken for reporting purposes.

The main purpose of the activity/ies at the installation is:-

|                                 |                                                      |
|---------------------------------|------------------------------------------------------|
| Section 4.2 Part A (1) (a) (i)  | Producing inorganic chemicals (Ammonia Plant)        |
| Section 4.2 Part A (1) (a) (ii) | Producing inorganic chemicals (3 Nitric Acid Plants) |
| Section 4.3 Part A (1) (a)      | Producing nitrogen based fertilizers (Nitram Plant)  |
| Section 4.8 Part B (a)          | Ammonia Storage and distribution.                    |

**Other PPC Permits relating to this installation**

| Permit holder               | Permit Number | Date of Issue |
|-----------------------------|---------------|---------------|
| Dalkia Utility Services plc | BX3296IU      | 31/08/05      |

**Superseded Licenses/Consents/Authorisations relating to this installation**

| Holder                                    | Reference Number | Date of Issue |
|-------------------------------------------|------------------|---------------|
| Terra Nitrogen (UK) Ltd IPC Authorisation | AN8321           | 07/02/95      |
| Terra Nitrogen (UK) Ltd IPC Authorisation | AL7561           | 05/08/94      |
| Terra Nitrogen (UK) Ltd IPC Authorisation | AL7553           | 16/09/04      |
| Terra Nitrogen (UK) Ltd WRA Consent       | 254/X/0674       | 21/08/87      |

Other activities may take place on the site of this installation which are not regulated under this Permit or any other PPC Permit referred to in the Table above.

| Other existing Licences/Authorisations/Registrations relating to this site |                  |               |
|----------------------------------------------------------------------------|------------------|---------------|
| Holder                                                                     | Reference Number | Date of issue |
| Terra Nitrogen (UK) Ltd WRA Consent (RT01)                                 | QR.25/04/1588    | 02/08/1999    |
| Terra Nitrogen (UK) Ltd (Closed source registration)                       | BX6723           | 25/06/2004    |
| Terra Nitrogen (UK) Ltd (Open source registration)                         | BC3064           | 04/01/1999    |
| Terra Nitrogen (UK) Ltd (Authorisation)                                    | BC3021           | 04/01/1999    |
| Terra Nitrogen (UK) Ltd (Closed source registration)                       | BC3099           | 04/01/1999    |
| Terra Nitrogen (UK) Ltd (Closed source registration)                       | BF2064           | 19/02/1999    |

## Talking to us

If you contact the Agency about this Permit please quote the Permit Number.

The Operator should use the Emergency Hotline telephone number (0800 80 70 60) or any other number notified to it to give a notification under condition 5.1.1 of the Permit.

## Confidentiality

The Permit/Variation requires the Operator to provide information to the Agency. The Agency will place the information onto the public registers in accordance with the requirements of the PPC Regulations. If the Operator considers that any information provided is commercially confidential, it may apply to the Agency to have such information withheld from the register as provided in the PPC Regulations. To enable the Agency to determine whether the information is commercially confidential, the Operator should clearly identify the information in question and should specify clear and precise reasons.

## Variations to the permit

This Permit may be varied in the future. The Status Log within the Introductory Note to any such variation will include summary details of the Permit, variations issued up to that point in time and state whether a consolidated version of the Permit has been issued.

## Surrender of the permit

Before this Permit can be wholly or partially surrendered, an application to surrender the Permit has to be made. For the applicant to be successful, they would have to be able to demonstrate to the Agency, in accordance with Regulation 19 of the PPC Regulations, that there is no pollution risk and that no further steps are required to return the site to a satisfactory state.

## Transfer of the permit or part of the permit

Before the Permit can be wholly or partially transferred to another person, a joint application to transfer the Permit has to be made by both the existing and proposed holders, in accordance with Regulation 18 of the PPC Regulations. A transfer will be allowed unless the Agency considers that the proposed holder will not be the person who will have control over the operation of the installation or will not ensure compliance with the conditions of the transferred Permit. If the Permit authorises the carrying out of a specified waste management activity, then there is a further requirement that the transferee is considered to be a "fit and proper person" to carry out that activity.

## Status Log

| Detail                                                        | Date                   | Comment                                                          |
|---------------------------------------------------------------|------------------------|------------------------------------------------------------------|
| Application BX3287IK                                          | Received 23/12/04      |                                                                  |
| Response to request for information                           | Request dated 11/03/05 | Response dated 02/06/05 and 20/06/05                             |
| Response to request for information (Application Site Report) | Request dated 14/06/05 | Response dated 04/07/05                                          |
| Permit determined                                             | 30/9/05                |                                                                  |
| Permit Varied to NP3034LV                                     | 1/08/2006              | Issued to ensure compliance is achievable with IP and monitoring |

*End of introductory Note*

**Variation Notice**

Pollution Prevention and Control  
(England and Wales) Regulations 2000



**ENVIRONMENT  
AGENCY**

## Variation Notice

Permit number  
BX3287IK

Variation Notice number  
NP3034LV

The Environment Agency in exercise of its powers under Regulation 17 of the Pollution Prevention and Control (England and Wales) Regulations 2000 (S.I. 2000 No. 1973) (as amended), hereby varies the Permit issued on 30<sup>th</sup> September 2005 and held by you.

**Terra Nitrogen (UK) Limited** ("the Operator"),

Of/ whose Registered Office is

Florence House  
Radcliffe Crescent  
Thornaby  
Stockton-on-Tees  
TS17 6BS

**Company registration number** 3455690

which relates to the operation of part of the Billingham Fertilizer Works Installation at:

**Billingham Site**

Terra Production Centre  
PO Box 81  
Billingham  
TS23 1XT

to the extent set out in Schedules 1 to 3 of this Variation Notice.

This Notice shall take effect from 2<sup>nd</sup> August 2006 at 00.01 hours.

Signed

**David Tarttelin**

Authorised to sign on behalf of the Environment Agency

Date

**1<sup>st</sup> August 2006**

## SCHEDULE 1 - CONDITIONS TO BE DELETED

**Table 1.4.1: Improvement programme**

| Reference               | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Date            |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>All Installation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                 |
| 7                       | The Operator shall review alternative techniques for preventing or minimising the release of Suspended Solids in the magnesium nitrate plant washings. The benchmark levels for these parameters listed in Agency Guidance for Speciality Organic Chemicals, S4.02 should be considered. If levels cannot be reduced, the Operator shall review alternatives to the current disposal route.<br><br>The Operator shall submit a written report of the findings to the Agency with an action plan for implementing the proposed changes and timescales for implementation. | 01 January 2007 |
| 9                       | The Operator shall undertake a review of options assessment on the emission to air of particulates from release points P1, P2, P3 and P4. The benchmark level for this parameter listed in Agency Guidance for Inorganic Chemicals, S4.03 should be considered and justification provided for any higher levels proposed.<br><br>A summary of the assessment shall be sent to the Agency together with a timetable to implement any necessary improvements identified.                                                                                                   | 01 January 2007 |

### Emissions to sewer

2.2.2.7 Emissions to sewer from the specified emission points in Table 2.2.7 shall only arise from the source(s) specified in that Table.

**Table 2.2.7 Emission points to sewer**

| Emission point reference or description                                                          | Source                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Sewer                                                       |
|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| S1 on Table 1 of Aquatic Release Assessment Report and Figure IPPC/TB/M2(e) Billingham Main Site | Ammonia Road Tanker Filling/Solution Plant. Non Routine. Bund drainings/storm water/site drainage. Nitrates Area. Cooling tower purges. Process effluents. Site drainage.<br>No 4 Ammonia Plant. Process effluents (inc. Benfield solution). Cooling tower purges. Site drainage.<br>2/3 CO <sub>2</sub> Plants. Cooling tower purges. Site drainage.<br>Demin Water Plant. Neutralised process effluents. Non Process Areas. Site drainage. Storm water. Non-Terra Sources as described in Section B2.2 of the Application. | RT01 –main drain from Billingham complex to the River Tees. |
| S2 on Table 1 of Aquatic Release Assessment Report and Figure IPPC/TB/M2(e) Billingham Main Site | Nitrates Area. Process Effluents. Site Drainage<br>Stores/labs/Offices<br>Non process Areas. Site Drainage. Storm Water.<br>Non-Terra Sources as described in Section B2.2 of the Application.                                                                                                                                                                                                                                                                                                                               | RT01 –main drain from Billingham complex to the River Tees. |

**Table 2.2.8 : Emission limits and monitoring frequency to sewer**

| Emission reference | point | Substance                  | Limit (including Reference Note 1) | Monitoring frequency | Monitoring method  |
|--------------------|-------|----------------------------|------------------------------------|----------------------|--------------------|
| S1                 |       | Ammoniacal Nitrogen (as N) | 2000kg/day                         | Daily composite      | Spectrophotometric |
| S1                 |       | Nitrate N                  | 500kg/day                          | Daily composite      | Spectrophotometric |
| S1                 |       | Methanol                   | 1000kg/day (Note 3)                | Daily composite      | GC with FID        |
| S2                 |       | Ammoniacal Nitrogen (as N) | 1000kg/day                         | Daily composite      | Spectrophotometric |
| S2                 |       | Nitrate N                  | 500kg/day                          | Daily composite      | Spectrophotometric |

Note 3: During periods of catalyst reduction following Ammonia 4 Plant catalyst change, start-up and breakdown/maintenance of condensate stripper, limit shall be 5 tonnes/day weekly mean.

**Table 2.10.1 : Other monitoring requirements**

| Emission point reference or source or description of point of measurement | Substance or parameter     | Monitoring frequency | Monitoring method  | Other specifications                                  |
|---------------------------------------------------------------------------|----------------------------|----------------------|--------------------|-------------------------------------------------------|
| B2                                                                        | Methanol                   | 6 Monthly            | Colorimetric Tube  |                                                       |
| S1                                                                        | Ammoniacal Nitrogen (as N) | Continuous           | Photochemical      |                                                       |
| S1                                                                        | Nitrate N                  | Continuous           | Photochemical      |                                                       |
| S1                                                                        | Total Organic Carbon (TOC) | Continuous           | Infra Red          |                                                       |
| S1                                                                        | Total Organic Carbon (TOC) | Daily Composite      | Infra Red          |                                                       |
| S1                                                                        | Flow                       | Continuous           | Ultrasonic Level   | Instantaneous and Integrated Daily Flow rate recorded |
| S1                                                                        | pH                         | Continuous           | pH meter           |                                                       |
| S2                                                                        | Ammoniacal Nitrogen (as N) | Continuous           | Photochemical      |                                                       |
| S2                                                                        | Nitrate N                  | Continuous           | Photochemical      |                                                       |
| S2                                                                        | Total Organic Carbon (TOC) | Continuous           | Infra Red          |                                                       |
| S2                                                                        | Total Organic Carbon (TOC) | Daily Composite      | Infra Red          |                                                       |
| S2                                                                        | Flow                       | Continuous           | Ultrasonic Level   | Instantaneous and Integrated Daily Flow rate recorded |
| S2                                                                        | pH                         | Continuous           | pH meter           |                                                       |
| W1                                                                        | Ammoniacal Nitrogen (as N) | Weekly Snap          | Spectrophotometric |                                                       |
| W1                                                                        | Nitrate N                  | Weekly Snap          | Spectrophotometric |                                                       |
| W3                                                                        | Suspended Solids           | Weekly Snap          | Gravimetric        |                                                       |
| W3                                                                        | pH                         | Continuous           | pH Meter           |                                                       |
| W3                                                                        | Total Organic Carbon (TOC) | Weekly Snap          | NDIR               |                                                       |

**Table S2: Reporting of monitoring data**

| Parameter                                 | Emission point | Reporting period | Period begins |
|-------------------------------------------|----------------|------------------|---------------|
| Nitrate. Maximum Daily Average kg/day     | S1             | Every 6 months   | 01/07/05      |
| Nitrate. Monthly Average kg/day           | S1             | Every 6 months   | 01/07/05      |
| Ammoniacal N Maximum Daily Average kg/day | S1             | Every 6 months   | 01/07/05      |
| Ammoniacal N Monthly Average kg/day       | S1             | Every 6 months   | 01/07/05      |
| Methanol Maximum Daily Average kg/day     | S1             | Every 6 months   | 01/07/05      |
| Methanol Monthly Average kg/day           | S1             | Every 6 months   | 01/07/05      |
| Ammoniacal N Maximum Daily Average kg/day | S2             | Every 6 months   | 01/07/05      |
| Ammoniacal N Monthly Average kg/day       | S2             | Every 6 months   | 01/07/05      |
| Nitrate. Maximum Daily Average kg/day     | S2             | Every 6 months   | 01/07/05      |
| Nitrate. Monthly Average kg/day           | S2             | Every 6 months   | 01/07/05      |

## SCHEDULE 2 - CONDITIONS TO BE AMENDED

### 1.2 Site

- 1.2.1 The activities authorised under condition 1.1.1 shall not extend beyond the Site, being the land generally shown edged in red and pipe-runs coloured blue on the Site Plan at Schedule 5 to this Permit. Detailed IPPC installation boundaries and pipeline technical connections are shown on the Site Plan IPPC/TB/M1b contained in Application section IPPC/TB/D1 which are inside the area edged in blue and indicated in green that represent the extent of the installation covered by this Permit and that/those of the other Operator of the installation

### 1.4 Improvement Programme

- 1.4.1 The Operator shall complete the improvements specified in Table 1.4.1 by the date specified in that table, and shall send written notification of the date of completion of each requirement to the Agency within 14 days of the completion of each such requirement.

**Table 1.4.1: Improvement programme**

| Reference               | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Date                                                             |
|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>All Installation</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                  |
| 1                       | The Operator shall conduct an assessment of all monitoring methods and procedures, both in-house and those employed by external contractors, for conformance with appropriate monitoring Standards, such as CEN, BSI, ISO, etc., having regard for the Agency Guidance for the Large Volume Organic Chemicals Sector IPPC S4.01 and the hierarchy of Sampling and Analysis Standards presented.<br><br>A written report on the findings and proposed actions will be submitted to the Agency.        | 01 January 2007 ✓                                                |
| 2                       | The Operator shall review the provision of MCERTS certification or MCERTS accreditation (as appropriate) for the monitoring equipment, personnel and organisations employed for the emission monitoring programme in condition 2.10.1 and propose a timetable in writing for achieving this standard or an equivalent acceptable to the Agency.                                                                                                                                                      | 01 January 2007 ✓                                                |
| 3                       | The Operator shall provide, in writing, a protocol to determine 'uncertainty' values associated with each parameter to be reported for each emission point, together with an indication of the likely uncertainty values associated with the test methods used.                                                                                                                                                                                                                                      | 01 January 2007 ✓                                                |
| 4                       | The Operator shall undertake a review of all containment measures at the Billingham Main Site to prevent releases of harmful substances to surface water, sewer and groundwater.<br><br>The operator shall produce a written report having regard for the techniques identified in agency Guidance for the Inorganic Chemicals Sector IPPC S4.03.<br><br>A proposed programme for improvements to be submitted by January 2007                                                                       | (i) 01 July 2006 ✓<br><br><br><br><br><br><br>(ii) 01 March 2007 |
| 5                       | The Operator shall review the arrangements for separating the effluent streams on the Billingham Main Site that feed to S1 and S2, and shall include consideration of the prevention, minimisation, segregation and treatment of streams prior to discharge, including options for biological treatment.<br><br><br><br><br><br><br>The operator shall produce a written report having regard for the Agency Sector Guidance Note IPC S4.03 and provide a timetable for any improvements identified. | 01 July 2006 ✓                                                   |

Table 1.4.1: Improvement programme

| Reference | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Date               |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 6         | The Operator shall carry out an environmental noise assessment at Western Site Boundary (Locations 1,6 and 7 Drawing IPPC/TB/M3) nearest to sensitive off-site receptors. This assessment shall have regard to the requirements within Agency Guidance Note for Noise, H3. The Operator shall submit a written report to the Agency detailing results against benchmarks (as listed in H3), conclusions and any recommendations along with any timetable for implementation.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 01 August 2007 ✓   |
|           | <b>Nitram</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                    |
| 8         | The operator shall investigate methods to reduce effluent discharge to release point BB09(W1), concentrating primarily on Ammoniacal Nitrogen, Suspended Solids and pH.<br><br>The assessment shall be sent to the Agency together with a timetable to implement any necessary improvements identified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 01 January 2008 ✓  |
|           | An interim report to be provided by 01 <del>February</del> <sup>March</sup> 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 01 March 2007      |
| 10        | The Operator shall undertake a review of options to reduce particulate emissions and the plume visibility from release points P1, P2, P3 and P4<br><br>The operator shall submit a written report to the Agency, with a proposed programme of activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 01 January 2008 ✓  |
|           | An interim report to be provided by 01 <del>February</del> <sup>March</sup> 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 01 March 2007      |
|           | <b>Ammonia Plant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |
| 11        | The Operator shall carry out a review of options to reduce Nitrogen Oxides (NO <sub>x</sub> ) from release point B1.<br><br>The Operator shall produce a written report having regard for techniques identified in the Agency Sector Guidance Note – combustion Activities (Consultation Draft 30.03.05)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 01 January 2007 ✓  |
| 12        | The Operator shall review techniques for monitoring and/or estimating or calculating releases of ammonia post No 4 Ammonia Plant CO <sub>2</sub> Blow off (Release point B2) sufficient to validate the emissions data used within H1 as part of the PPC Application.<br><br>The Operator shall submit a written report to the Agency detailing results against any benchmarks and test for significance (as detailed in IPPC H1 Guidance), conclusions and any recommendations along with any timetable for implementation.                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 01 August 2007 ✓   |
| 13        | For emission point B1 on the Ammonia plant, the operator shall continuously monitor the NO <sub>x</sub> emissions as NO <sub>2</sub> , using an installed appropriate MCERT accredited instrument for a 6 month trial period, and provide data on the following:-<br><br>i). demonstrate the stability of the NO <sub>2</sub> emissions and provide hourly, daily and monthly means, with their associated standard deviations, and the max and min data,<br><br>ii). characterise the emissions as a function of production rate and other operating variables.<br><br>iii) propose consent limits based on the data,<br><br>iv) propose revised monitoring arrangements,<br><br>v). a demonstration of the environmental impacts on nearby habitats and local air quality, based on maximum and mean one hour NO <sub>2</sub> emission rates for all significant NO <sub>2</sub> emissions.<br><br>The operator shall submit a written report to the Agency on its findings. | 01 December 2007 ✓ |

**Table 1.4.1: Improvement programme**

| Reference          | Requirement                                                                                                                                                                                                                                                                                                                                                                                                    | Date              |
|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>Nitric Acid</b> |                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| 14                 | The Operator shall carry out a wide ranging review of options to reduce Nitrous Oxide from release points B4, B5 and B6. The Operator shall produce a written report for The Agency and provide a timetable for any improvements identified. The report should cover in-process techniques such as conditions at ammonia oxidation and nitrous oxide decomposition along with abatement options.               | 01 June 2007      |
| 15                 | The Operator shall develop a suitable monitoring programme to characterise the emission of Nitrous Oxide from release point B4. The equipment shall meet MCERTS requirements unless otherwise agreed in writing by The Agency. The Operator shall submit a written proposal to the Agency detailing the proposed technique and monitoring frequency.                                                           | 01 March 2007     |
| <b>NT Storage</b>  |                                                                                                                                                                                                                                                                                                                                                                                                                |                   |
| 16                 | The Operator shall carry out a programme of representative monitoring for ammonia from release points NT01 and NT02 using MCERTS approved methods or equivalent approved in writing by the Agency. A written report shall be submitted to the Agency to include concentration data, mass release and operational data sufficient to validate the emissions data used within H1 as part of the PPC Application. | 01 January 2007 ✓ |
| 17                 | The Operator shall reassess the environmental impact of ammonia emissions using the information provided from the monitoring programme outlined in improvement condition 16. A written report with conclusions and recommendations shall be submitted to the Agency.                                                                                                                                           | 01 April 2007     |

## 2.2 Emissions

### 2.2.1 Emissions to Air, (including heat, but excluding Odour, Noise or Vibration) from Specified Points

2.2.1.1 This Part 2.2.1 of this Permit shall not apply to releases of odour, noise or vibration.

2.2.1.2 Emissions to air from the emission points in Table 2.2.1 shall only arise from the source(s) specified in that Table.

**Table 2.2.1 : Emission points to air**

| Emission reference or description | point or Source                                 | Location of emission point                                    |
|-----------------------------------|-------------------------------------------------|---------------------------------------------------------------|
| B1                                | No 4 Ammonia Plant Flue Gas Stack               | Point B1 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B2                                | No 4 Ammonia Plant CO <sub>2</sub> Blow-off     | Point B2 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B3                                | No 3 CO <sub>2</sub> Plant Condenser Purge      | Point B3 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B4                                | No 1 Weak Nitric Acid Plant Tail Gas Stack      | Point B4 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B5                                | No 3 Weak Nitric Acid Plant Tail Gas Stack      | Point B5 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B6                                | No 4 Weak Nitric Acid Plant Tail Gas Stack      | Point B6 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B7                                | No 1 Weak Nitric Acid Plant Blow Down Separator | Point B7 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B8                                | No 3 Weak Nitric Acid Plant Blow Down Separator | Point B8 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B9                                | No 4 Weak Nitric Acid Plant Blow Down Separator | Point B9 on Figure IPPC/TB/M2(e) Billingham Main Site.        |
| B10                               | Nitrates Tank Farm Vents                        | Point B10 on Figure IPPC/TB/M2(e) Billingham Main Site.       |
| P1                                | Nitram Tower Top Fan A                          | Point P1 on Figure IPPC/TB/M2(f) Portrack Site                |
| P2                                | Nitram Tower Top Fan B                          | Point P2 on Figure IPPC/TB/M2(f) Portrack Site                |
| P3                                | Nitram Tower Top Fan C                          | Point P3 on Figure IPPC/TB/M2(f) Portrack Site                |
| P4                                | Nitram Tower Up-duct                            | Point P4 on Figure IPPC/TB/M2(f) Portrack Site                |
| P5                                | Magnesite Reaction Vessel Vent                  | Point P5 on Figure IPPC/TB/M2(f) Portrack Site                |
| NT1                               | Tanks 1 and 3 Purge                             | Point NT1 on Figure IPPC/TB/M2(g) North Tees Ammonia Storage. |
| NT2                               | Tank 2 Purge                                    | Point NT2 on Figure IPPC/TB/M2(g) North Tees Ammonia Storage. |

2.2.1.3 The limits for emissions to air for the parameter(s) and emission point(s) set out in Table 2.2.2 shall not be exceeded.

**Table 2.2.2 : Emission limits to air and monitoring**

| Emission point reference | Parameter                                | Limit (including Reference Period) <sup>1</sup> | Monitoring frequency<br>Note 2<br>Note 3 | Monitoring method  |                  |
|--------------------------|------------------------------------------|-------------------------------------------------|------------------------------------------|--------------------|------------------|
| B1                       | Carbon Monoxide                          | 100 mg/m <sup>3</sup> hourly average            | 6 monthly                                | Electrochemical    | Sensor (Lancom)  |
| B1                       | Oxides of Nitrogen (as NO <sub>2</sub> ) | 1500 mg/m <sup>3</sup> hourly average           | 6 monthly                                | Electrochemical    | Sensor (Lancom)  |
| B4                       | Oxides of Nitrogen (as NO <sub>2</sub> ) | 600 mg/m <sup>3</sup> hourly average (no SCR)   | Continuous                               | Infra Red Analyser |                  |
| B5                       | Oxides of Nitrogen (as NO <sub>2</sub> ) | 400 mg/m <sup>3</sup> hourly average            | Continuous                               | Infra Red Analyser |                  |
| B6                       | Oxides of Nitrogen (as NO <sub>2</sub> ) | 400 mg/m <sup>3</sup> hourly average            | Continuous                               | Infra Red Analyser |                  |
| P1                       | Particulates - Ammonium Nitrate          | 75 mg/m <sup>3</sup> hourly average             | 6 monthly                                | Extractive filter  | (Modified BCURA) |
| P2                       | Particulates - Ammonium Nitrate          | 75 mg/m <sup>3</sup> hourly average             | 6 monthly                                | Extractive filter  | (Modified BCURA) |
| P3                       | Particulates - Ammonium Nitrate          | 75 mg/m <sup>3</sup> hourly average             | 6 monthly                                | Extractive filter  | (Modified BCURA) |
| P4                       | Particulates - Ammonium Nitrate          | 80 mg/m <sup>3</sup> hourly average             | 6 monthly                                | Extractive filter  | (Modified BCURA) |

Note 1: See Section 6 for reference conditions.

Note 2: For continuous measurements; In compliance if 95% of hourly average measurements within any rolling 24 hour period are within limit.

Note 3: For continuous measurements; Limits do not apply for 2 hour period representing plant start-up and shut-down

2.2.1.4 No condition applies

## Emissions to sewer

2.2.2.8 The limits for the emissions to sewer for the parameter(s) and emission point(s) set out in Table 2.2.8 shall not be exceeded.

**Table 2.2.8 : Emission limits and monitoring frequency to sewer**

| Emission point reference | Substance | Limit (including Reference Period)<br>Note 1 | Monitoring frequency |            |           | Monitoring method                         |
|--------------------------|-----------|----------------------------------------------|----------------------|------------|-----------|-------------------------------------------|
| S1                       | Vanadium  | 10kg/day sample                              | Batch                | Each batch | and every | Analysis of Benfield Solution break tank. |

Note 1: Limit represents daily average load figure calculated over one week of samples.

2.2.2.9 Where a substance is specified in Table 2.2.8 but no limit is set for it, the concentration of such substance in emissions to sewer from the relevant emission point shall be no greater than the background concentration.

## 2.10 On-site Monitoring

- 2.10.1 The Operator shall maintain and implement an emissions monitoring programme which ensures that emissions are monitored from the specified points, for the parameters listed in and to the frequencies and methods described in Tables 2.2.2, 2.2.5 and 2.2.8, unless otherwise agreed in writing, and that the results of such monitoring are assessed. The programme shall ensure that monitoring is carried out under an appropriate range of operating conditions.
- 2.10.2 The Operator shall carry out environmental or other specified substance monitoring to the frequencies and methods described in Table 2.10.1

**Table 2.10.1 : Other monitoring requirements**

| Emission point reference or source or description of point of measurement | Substance or parameter                            | Monitoring frequency   | Monitoring method                   | Other specifications |
|---------------------------------------------------------------------------|---------------------------------------------------|------------------------|-------------------------------------|----------------------|
| B4                                                                        | Nitrous Oxide (N <sub>2</sub> O)                  | Occasional spot        | Tedlar Bag. Analysis by GC with TDC |                      |
| B5                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| B5                                                                        | Nitrous Oxide (N <sub>2</sub> O)<br>Daily average | Continuous             | Infra Red Analyser                  |                      |
| B6                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| B6                                                                        | Nitrous Oxide (N <sub>2</sub> O)<br>Daily average | Continuous             | Infra Red Analyser                  |                      |
| P1                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| P2                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| P3                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| P4                                                                        | Ammonia                                           | 6 Monthly              | Colorimetric Tube                   |                      |
| W1                                                                        | Flow                                              | Daily                  | Calculation and Estimation Method   |                      |
| Benfield Sump                                                             | Volume discharged per batch                       | Each Batch             | Calculation                         |                      |
| WNA Plant running                                                         | On-time                                           | Continual on operation | Timing.                             |                      |

## Schedule 2 - Reporting of monitoring data

Parameters for which reports shall be made, in accordance with conditions 4.1.2 and 4.1.3 of this Permit, are listed below.

**Table S2: Reporting of monitoring data**

| Parameter                                                       | Emission point | Reporting period | Period begins |
|-----------------------------------------------------------------|----------------|------------------|---------------|
| Carbon Monoxide<br>mg m <sup>-3</sup>                           | B1             | Every 6 months   | 01/07/05      |
| Oxides of nitrogen.<br>mg m <sup>-3</sup>                       | B1             | Every 6 months   | 01/07/05      |
| Oxides of nitrogen Maximum Hourly.<br>mg m <sup>-3</sup>        | B4, B5, B6     | Every 6 months   | 01/07/05      |
| Oxides of nitrogen Maximum Daily and Day.<br>mg m <sup>-3</sup> | B4, B5, B6     | Every 6 months   | 01/07/05      |
| Oxides of nitrogen. Monthly Average.<br>mg m <sup>-3</sup>      | B4, B5, B6     | Every 6 months   | 01/07/05      |
| Nitrous Oxide Maximum Hourly.<br>mg m <sup>-3</sup>             | B5, B6         | Every 6 months   | 01/07/05      |
| Nitrous Oxide Maximum Daily and Day.<br>mg m <sup>-3</sup>      | B5, B6         | Every 6 months   | 01/07/05      |
| Nitrous Oxide. Monthly Average.<br>mg m <sup>-3</sup>           | B4, B5, B6     | Every 6 months   | 01/07/05      |
| Particulates<br>mg m <sup>-3</sup>                              | P1, P2, P3, P4 | Every 6 months   | 01/07/05      |
| pH Max, Min                                                     | W1             | Every 6 months   | 01/07/05      |
| Ammoniacal N.<br>Maximum Daily Average kg/day                   | W1             | Every 6 months   | 01/07/05      |
| Ammoniacal N.<br>Monthly Average kg/day                         | W1             | Every 6 months   | 01/07/05      |
| Nitrate. Maximum Daily Average kg/day                           | W1             | Every 6 months   | 01/07/05      |
| Nitrate. Monthly Average kg/day                                 | W1             | Every 6 months   | 01/07/05      |
| Suspended Solids. Maximum Daily Average kg/day                  | W1             | Every 6 months   | 01/07/05      |
| Suspended Solids. Monthly Average kg/day                        | W1             | Every 6 months   | 01/07/05      |
| Ammoniacal N mg/l                                               | W3             | Every 6 months   | 01/07/05      |
| Vanadium. Maximum Daily Average kg/day                          | S1             | Every 6 months   | 01/07/05      |
| Vanadium. Monthly Average Kg/day                                | S1             | Every 6 months   | 01/07/05      |
| Water usage                                                     |                | Annually         | 01/01/05      |
| Energy usage                                                    |                | Annually         | 01/01/05      |
| Waste disposal and/or recovery.                                 |                | Annually         | 01/01/05      |

## Schedule 4 - Reporting of performance data

Data required to be recorded and reported by Condition 4.1.3. The data should be assessed at the frequency given and reported annually to the Agency.

**Table S4.1: Annual Production/Treatment**

|                                 |            |
|---------------------------------|------------|
| Production of Ammonia           | x (tonnes) |
| Production of Nitric Acid       | y (tonnes) |
| Production of Ammonium Nitrate. | Z (tonnes) |

**Table S4.2: Performance parameters**

| Parameter             | Frequency of assessment | Performance indicator     |
|-----------------------|-------------------------|---------------------------|
| Oxides of Nitrogen    | 6 monthly               | tonnes/t Ammonia          |
| Oxides of Nitrogen    | Quarterly               | tonnes/t Nitric Acid      |
| Nitrous Oxide         | Quarterly               | tonnes/t Nitric Acid      |
| Particulates          | 6 monthly               | tonnes/t Ammonium Nitrate |
| ammoniacal N          | Quarterly               | tonnes/t Ammonia          |
| ammoniacal N          | Quarterly               | tonnes/t Ammonium Nitrate |
| Potable water use     | Quarterly               | m <sup>3</sup> /t         |
| Non potable water use | Quarterly               | m <sup>3</sup> /t         |
| WNA Plant 1 run time  | Annual                  | Hours                     |

## **SCHEDULE 3 - CONDITIONS TO BE ADDED**

1. None